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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,905	11/06/2006	Makiko Kitazoe	029567-00010	5377

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EXAMINER

CHEN, KEATH T

ART UNIT	PAPER NUMBER
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1716

NOTIFICATION DATE	DELIVERY MODE
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06/03/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/591,905	Applicant(s) KITAZOE ET AL.	
	Examiner KEATH CHEN	Art Unit 1716	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-9, 19, and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's amendment, filed on 04/18/2011, in response to the rejection of claims 1-3, 6-9, and 19-20 in the non-final office action, mailed on 10/21/2010, by amending claims 1 and 19 is entered and will be discussed below.

Response to Arguments

Applicants' arguments filed 04/18/2011 arguing Bridge '868's polarity switch is due to AC circuit is persuasive, see page 9. The rejection based on '868 has been withdrawn. New references are found and will be discussed below. Therefore, this office action is re-opened as non-final rejection.

Election/Restrictions

1. Claims 10-18 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention II, there being no allowable generic or linking claim.

Claim interpretation

The newly amended limitation "means for changing the polarity of the bias voltage" of claims 1 and 19 will be treated as 35 USC 112 6th paragraph. This is treated as the changeover switch 8a. See MPEP 2181 I.

The portion "based on a kind of the cleaning gas" will not be treated as 35 USC 112 6th paragraph because the Specification only describes "The polarity of a bias voltage to be applied is set ... can be appropriately changed depending on the kind of an inert gas and a reducing gas which are introduced" which includes turn the

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changeover switch manually. There is no description of automatic detection of the kind of the cleaning gas, sending the detection signal to the controller 10, turn the changeover switch based on the detected gas signal (see page 14 line 11 to page 15, line 3).

Previously amended limitation “means for heating ...” is treated according to 35 USC 112 6th paragraph and it is considered as a heating power supply 6.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35 U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-3, 6-9 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi (US 6375756, hereafter '756), in view of Sawayama et al. (US 20030164225, hereafter '225), Dowling (US 6562201, hereafter '201), Harris et al. (US 4781803, hereafter '803), and Reale (US 5451754, hereafter '754).

'756 teaches some limitations:

Claims 1 and 19: A self-cleaning catalytic chemical vapor deposition apparatus (Fig. 1, col. 4, line 59) which forms a thin film by a catalytic action of a resistance heated (by power source #30, col. 5, lines 11-13) catalytic body (#3, col. 5, lines 11-17) within a reaction chamber capable of being evacuated to a vacuum (col. 4, line 60),

a cleaning gas (abstract, however, this is intended use) that comprises one of an inert gas or a reducing gas (for example cleaning gas can be diluted by Ar or He, col. 7, lines 38-44, therefore, comprises an inert gas; alternatively, the apparatus is capable of

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supplying the hydrogen gas, col. 7, line 60, its function of cleaning gas is an intended use of the apparatus),

a gas-supply port through which the cleaning gas is introduced in the reaction chamber (gas supply vessel 2, col. 4, line 65),

means for heating (energy supply mechanism 30, col. 5, line 12, same as Applicant's heating power supply) the catalytic body at about 1700 °C (the chamber is maintained at a temperature of about 1000-1800° C, col. 1, line 32-33, and therefore is capable of maintained at about 1700 ° C, the energy mechanism 30 is capable of heating "during substantially an entire duration of self-cleaning", see discussion of intended use below);

wherein the cleaning gas removes an adhering film which has adhered to the interior of the reaction chamber while suppressing etching of the catalytic body itself on the basis of a radical species generated when the cleaning gas comes into contact with the resistance heated catalytic body and is decomposed (fluorine reacts with deposited film to produce SiF₄ while tungsten wire was stable during cleaning treatment, col. 8, lines 38-56).

Applicant's claimed requirements "a cleaning gas that comprises one of an inert gas or a reducing gas", (wherein the apparatus removes an adhering film which has adhered to the interior of the reaction chamber) "while suppressing etching of the catalytic body itself on the basis of a radical species generated when the cleaning gas comes into contact with the resistance heated catalytic body and is decomposed, the

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bias voltage applied to the catalytic body, and a polarity of the bias voltage”, (wherein the catalytic body has a temperature maintained at about 1700° C) “during substantially an entire duration of self-cleaning”, and “based on a kind of the cleaning gas” are considered intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

‘756 does not teach the other limitations of

Claims 1 and 19: (1A) a constant-current heating power supply,

(1B) a constant-voltage power supply to apply a bias voltage to the catalytic body,

(1C) means for changing the polarity of the bias voltage based on a kind of the cleaning gas.

Claim 9: a monitoring device which detects the occurrence of etching of the catalytic body itself on the basis of electric resistance of the catalytic body.

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'225 is an analogous art in the field of catalytic CVD ([0175], see also [0005], hot-wire CVD). '225 teaches preferably controlling a predetermined current density to be constant to the power supply, so that the chemical reaction is stabilized and the service life of the heat generating member is extended ([0045]). '225 also teaches a current sensor ([0315], 5th sentence).

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to adopted a constant current power supply, as taught by '225, to the energy supply mechanism 30 of '756 (the limitation of 1A) by using a current sensor (the limitations of claim 9), for the purpose of stabilizing the chemical reaction and extending the service life of the heat generating member, as taught by '225 ([0045]).

'201 is an analogous art in the field of controlling corrosion (title) of metallic structure (col. 1, line 20). '201 teaches cathodic protection (col. 1, line 36, see also lines 51-64).

'803 is an analogous art in the field of corrosion resistance of metal (col. 1, lines 23-27). '803 teaches that corrosion resistance during anodic bias at certain species (col. 4, lines 33-37).

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'754 is an analogous art in the field of controlling charge of substrate (abstract) particularly in sputtering metal film (col. 3, lines 52-53). '754 teaches a changeover switch which change polarity of the bias voltage, including ground, applied to the shield (col. 4, lines 30-39) to control the charge deposited on the substrate (#14). Note the DC source 23 and 27 has the same symbol as Applicants' power sources 8 in Fig. 1, a constant voltage source.

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have combined '201, '803, and '754 with '756 and 225. Specifically, to have applied either a cathodic or anodic bias voltage, as taught by '201 and '803, respectively, to the hot element (#3) in the apparatus of '756, and furthermore to have adopted the bias voltage switch with constant voltage supplies (the limitations of 1B and 1C) as taught in Fig. 1 of '754 to switch the polarity as needed for switching the polarity for '201 and '803, for the purpose of inhibiting corrosion as taught in '756 (col. 6, lines 19-26) and '201 (col. 1, line 36) and '803 (col. 4, lines 33-37) and to provide polarity switch capability as taught by '868 (col. 8, lines 37-40 and col. 9, lines 21-26).

Note the limitations "based on a kind of the cleaning gas" is an intended use. The combined apparatus is capable of this operation, for example, by operator manually change the switch depending on the feeding gas.

'756 further teaches the limitations of:

Claim 2: The self-cleaning catalytic chemical vapor deposition apparatus according to claim 1, further comprising a radical species generator (plasma generation, col. 7, lines 45-48) which decomposes the cleaning gas into a radical species and introduces the radical species into the reaction chamber.

The apparatus of the above combination would have the capability of supplying various gases and setting polarity according to the gases species of the claim limitations of claims 3, 6-8 and 20 (all intended use).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 20050109627 is cited for applying negative bias to protect from corrosion ([0040]).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on 6:30AM-3 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KEATH T CHEN/
Primary Examiner, Art Unit 1716